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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/971,711	10/09/2001	Satoshi Sugaya	Q66406	4242

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EXAMINER

JACKSON, ANDRE K

ART UNIT PAPER NUMBER

2856

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/971,711	<b>Applicant(s)</b> SUGAYA ET AL.	
	<b>Examiner</b> André K. Jackson	<b>Art Unit</b> 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennewitz et al. in view of Gokhfeld.

Regarding claim 4, Bennewitz et al. disclose in "Relative humidity detector systems and method of increasing the calibration period of relative humidity detector systems" an insulating substrate, a moisture sensitive layer, a lower electrode having a noble metal (Column 5), an upper electrode having a noble metal and porous body (Column 6) and where the upper electrode is joined to the moisture sensitive layer, part of the substrate (Figure 1). What is not disclosed by Bennewitz et al. a heater provided in the insulating substrate. However, Gokhfeld disclose in "Humidity sensor with differential thermal detection and method of sensing" a heater provided in the insulating substrate (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bennewitz et al. to include a

heater provided in the insulating substrate as disclosed by Gokhfeld. By adding this feature the artisan would be able to heat and elevate the temperature of the apparatus to determine the temperature coefficient.

Regarding claim 2, Bennewitz et al. disclose a lower electrode predominantly containing platinum (Columns 5-6).

Regarding claim 3, Bennewitz et al. disclose where the one electrode has a porous body. It is clearly within the purview of the skilled artisan to provide both electrodes with this feature since this would give the instrument the ability to have moisture penetrate from the upper and lower electrode.

Regarding claim 5, Bennewitz et al. does not disclose where the temperature measurement resistor is provided in the insulating substrate. However, Gokhfeld discloses where the temperature measurement resistor is provided in the insulating substrate (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Bennewitz et al. to include where the temperature measurement resistor is provided in the insulating substrate as disclosed by Gokhfeld since this arrangement would make the temperature measurement more precise.

Regarding claim 6, Bennewitz et al. does not disclose where the heater is located directly below the moisture sensitive layer. However, Gokhfeld discloses where the heater is located directly below the moisture

sensitive layer (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bennewitz et al. to include where the heater is located directly below the moisture sensitive layer as disclosed by Gokhfeld. By adding this feature the artisan would be able to heat and elevate the temperature of the apparatus to determine the temperature coefficient.

Regarding claim 7, Bennewitz et al. does not disclose a temperature measurement resistor located directly below the moisture sensitive layer. However, Gokhfeld disclose where the temperature measurement resistor is located directly below the moisture sensitive layer (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Bennewitz et al. to include a temperature measurement resistor located directly below the moisture sensitive layer as disclosed by Gokhfeld in order to measure the temperature instantaneously.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennewitz et al. in view of Sunano et al.

Regarding claim 8, Bennewitz et al. disclose an insulating substrate, a moisture sensitive layer, a lower electrode having a noble metal (Column 5), an upper electrode having a noble metal and porous body (Column 6) and where the upper electrode is joined to the moisture sensitive layer, part of the substrate (Figure 1). Bennewitz et al. does not

disclose where the sensor is adapted for measuring humidity in an atmosphere containing a very small amount of oxygen and containing a reducing gas. However, Sunano et al. disclose in "Gas sensor" where the sensor is adapted for measuring humidity in an atmosphere containing a reducing gas (Columns 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Bennewitz et al. to include where the sensor is adapted for measuring humidity in an atmosphere containing a reducing gas as taught by Sunano et al. By adding this feature the user would be able to measure the moisture within the engine exhaust. To provide the apparatus of Bennewitz et al. with a very small amount of oxygen is well within the purview of the skilled artisan since it is well known that the smaller amount of oxygen lowers the electrical resistance.

4. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennewitz et al. in view of Kampe et al.

Regarding claims 9 and 10, Bennewitz et al. disclose an insulating substrate, a moisture sensitive layer, a lower electrode having a noble metal (Column 5), an upper electrode having a noble metal and porous body (Column 6) and where the upper electrode is joined to the moisture sensitive layer, part of the substrate (Figure 1). Bennewitz et al. does not disclose where the size of the pores in the upper and lower electrodes is 0.5-20  $\mu\text{m}$ . However, Kampe et al. disclose in "Method of producing a gas

diffusion electrode" where the size of the pores in the electrode is 20  $\mu\text{m}$  (Column 3). Therefore, to modify Bennewitz et al. to include where the size of the pores in the electrode is 20  $\mu\text{m}$  as taught by Kampe et al. is clearly within the purview of the skilled artisan since this modification would give a good opening percentage for calculations. The pore size of one electrode is given. It is clearly within the purview of the skilled artisan to provide both electrodes with this feature since this would give the instrument the ability to have moisture penetrate from the upper and lower electrode.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennewitz et al. in view Tanino et al.

Regarding claim 11, Bennewitz et al. does not disclose where the moisture sensitive layer is 0.05-0.2 $\mu\text{m}$ . However, Tanino et al. disclose in "Humidity sensing element" a moisture sensitive layer that is 0.05-0.2  $\mu\text{m}$  [0.01-3 $\mu\text{m}$ ] (Column 3). Therefore, it would have been obvious to modify Bennewitz et al. to include where the moisture sensitive layer is 0.05-0.2  $\mu\text{m}$  as taught by Tanino et al. since this modification would help to keep particulates from the atmosphere from depositing onto the humidity-sensing parts.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennewitz et al. in view Möbius et al.

Regarding claims 12 and 13, Bennewitz et al. disclose an insulating substrate, a moisture sensitive layer, a lower electrode having a noble metal (Column 5), an upper electrode having a noble metal and porous body (Column 6) and where the upper electrode is joined to the moisture sensitive layer, part of the substrate (Figure 1). Bennewitz et al. does not disclose where particles are incorporated in an amount of 1-20 weight percentage of the upper and lower electrode. However, Möbius et al. disclose in "Method of producing fuel cells with solid electrolytes and ceramic oxide electrode layers" particles that are incorporated in an amount of 1-20 weight percentage on the electrode (Column 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Bennewitz et al. to include particles incorporated in an amount of 1-20 weight percentage on the electrode as taught by Möbius et al. since this modification would give good resistance-humidity characteristics. The weight percentage of one electrode is given. It is clearly within the purview of the skilled artisan to provide both electrodes with this feature since this would give the instrument the ability to have moisture penetrate from the upper and lower electrode.

### ***Response to Arguments***

7. Applicants' arguments with respect to claims 2-13 have been considered but are moot in view of the new grounds of rejection.




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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (703) 305-1522. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A.J. 

January 9, 2004

  
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